

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES
Ex parte Saidman et al.
Appeal No. _____**

Serial No.: 10/700,612
Filed: November 4, 2003
Art Unit: 3752
Examiner: Steven J. Ganey
Inventor: Laurence B. Saidman et al.
Title: LIQUID MATERIAL DISPENSING APPARATUS AND METHOD
UTILIZING PULSED PRESSURIZED AIR
Attorney Docket: NOR-1114
Confirmation No.: 6511

Cincinnati, Ohio 45202

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Commissioner for Patents
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BRIEF ON APPEAL

This brief is in furtherance of Appellants' Notice of Appeal filed September 29, 2008, appealing the decision of the Examiner dated June 30, 2008, finally rejecting claims 1, 2, 4-11, 13, and 14 (all pending claims). A copy of the claims appears in the Claims Appendix to this brief.

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I. Real Party in Interest

The real party in interest is Nordson Corporation of Westlake, Ohio, which is the assignee of the present invention.

II. Related Appeals and Interferences

There are no related appeals or interferences known to the Appellants or the Appellants' legal representative that will directly affect, or be directly affected by, or will have a bearing on the decision of the Board in the present Appeal.

III. Status of Claims

Claims 1, 2, 4-11, 13, and 14 remain pending in the Application after the final rejection dated June 30, 2008, and are subject to this Appeal. Claims 10, 11, and 14 stand rejected under 35 U.S.C. §102(b) as being anticipated by PCT Publication No. WO99/54057. Claims 1, 2, 4-6, 9, and 13 stand rejected under 35 U.S.C. §103(a) as being unpatentable over WO99/54057. Claims 7 and 8 stand rejected under 35 U.S.C. §103(a) as being unpatentable over the combination of WO99/54057 and U.S. Patent No. 4,995,333 to Keller et al.

IV. Status of Amendments

There are no amendments pending after the final rejection dated June 30, 2008.

V. Summary of Claimed Subject Matter

Claims 1, 9, 10, and 14 are independent claims. Below, Appellants have provided a summary of the claim language mapped to the supporting disclosure of the exemplary embodiments for representation purposes only.

Claim 1 is directed to an apparatus for dispensing liquid material as an attenuated continuous stream. The apparatus includes a dispensing module 16 including a liquid supply passage 40 adapted to be in fluid communication with a supply 22 of liquid material, and an air supply passage 42 adapted to be in fluid communication with a source 24 of pressurized air. (Application at paragraphs 0007, 0021, and FIGS. 1 and 5.) A nozzle 44 is operatively coupled to the dispensing module 16 and comprises a liquid discharge passage 46 in fluid communication with the liquid supply passage 40, and an air discharge passage 48 in fluid communication with the air supply passage 42. (Application at paragraph 0021.) The liquid discharge passage 46 has a liquid discharge outlet 50 for discharging liquid material 12, and the air discharge passage 48 has an air outlet 52 configured to direct pressurized air generally toward the liquid material 12 discharged from the liquid discharge outlet 50. (Application at paragraph 0022.) The apparatus further includes an air valve 30 operatively coupled to the air discharge passage 48 (Application at paragraph 0020 and FIG. 1), and a controller 60 coupled with the air valve 30 and operable to actuate the air valve 30 in a manner that pulses the pressurized air discharging from the air outlet 52 as the liquid material 12 is discharged to move the liquid material 12 discharging from the liquid discharge outlet 50 in a desired pattern as the attenuated continuous stream. (Application at paragraphs 0026, 0028 and FIG. 2.)

Claim 9 is also directed to an apparatus for dispensing liquid material, including a dispensing module 16b having a liquid supply passage 40 adapted to be in fluid communication with a supply 22 of liquid material 12, and an air supply passage 42 adapted to be in fluid communication with a source 24 of pressurized air. (Application at paragraphs 0007, 0021, and FIGS. 1 and 5.) A nozzle 44b is operatively coupled to the dispensing module 16b (Application at paragraph 0022 and FIG. 3B) and comprises first and second liquid discharge passages 46 in fluid communication with the liquid supply passage 40, and an air discharge passage 48 in fluid communication with the air supply passage 42. (Application at paragraph 0021.) The first and second liquid discharge passages 46 have respective first and second liquid discharge outlets 50 for discharging the liquid material 12. (Application at paragraph 0024 and FIG. 4B.) The air discharge passage 48 has an air outlet 52 positioned between the first and second liquid discharge outlets 50 and is configured to direct the pressurized air generally toward the liquid material 12 that is discharged from the first and second liquid discharge outlets 50. (Application at paragraph 0024 and FIG. 4B.) The apparatus further includes an air valve 30 operatively coupled to the air discharge passage 48 (Application at paragraphs 0020 and 0025), and a controller 60 coupled with the air valve 30 and operable to actuate the air valve 30 in a manner that varies the pressure of the pressurized air discharging from the air outlet 52 as the liquid material 12 is discharged to move the liquid material 12 discharging from the liquid discharge outlet 50 in desired patterns. (Application at paragraphs 0024 and 0025.)

Claim 10 is directed to a method of dispensing liquid material as an attenuated continuous stream from a nozzle 44 having a liquid discharge outlet 50 and an air outlet

52. The method includes dispensing liquid material 12 from the liquid discharge outlet 50, discharging a stream of pressurized air from the air outlet 52 toward the dispensing liquid material 12, and pulsing the pressurized air while dispensing the liquid material 12 to cause the liquid material 12 to move in a desired pattern as the attenuated continuous stream. (Application at paragraph 0028.)

Claim 14 is also directed to a method of dispensing liquid material as an attenuated continuous stream from a nozzle 44 having a liquid discharge outlet 50 and an air outlet 52. The method includes dispensing liquid material 12 from the liquid discharge outlet 50, discharging a stream of pressurized air from the air outlet 52 toward the dispensing liquid material 12, and varying the pressure of the pressurized air while dispensing the liquid material 12 to cause the liquid material 12 to move in a desired pattern as the attenuated continuous stream. (Application at paragraph 0028.)

VI. Grounds of Rejection to be Reviewed on Appeal

A. The rejections of claims 10, 11, and 14 under 35 U.S.C. §102(b) as being anticipated by WO99/54057.

B. The rejections of claims 1, 2, 4-6, 9, and 13 under 35 U.S.C. §103(a) as being unpatentable over WO99/54057.

C. The rejections of claims 7 and 8 under 35 U.S.C. §103(a) as being unpatentable over the combination of WO99/54057 and U.S. Patent No. 4,995,333 to Keller et al.

VII. Argument

A. The Rejections of Claims 10, 11, and 14 Under 35 U.S.C. §102

Claims 10, 11, and 14 stand rejected under 35 U.S.C. §102(b) as being anticipated by PCT Publication No. WO99/54057. Claims 10 and 14 are the only independent claims of this rejected group, and are directed to methods of dispensing liquid material as an attenuated continuous stream from a nozzle having a liquid discharge outlet and an air outlet, including:

dispensing liquid material from the liquid discharge outlet;

discharging a stream of pressurized air from the air outlet toward the dispensing liquid material; and

pulsing the pressurized air while dispensing the liquid material to cause the liquid material to move in a desired pattern as the attenuated continuous stream.

Claim 14 is similar to claim 10, but recites "varying the pressure of the pressurized air while dispensing the liquid material to cause the liquid material to move in a desired pattern as the attenuated continuous stream."

The Examiner's rejections of claims 10 and 14 should be reversed because WO99/54057 fails to disclose each and every element recited in these claims. The Federal Circuit has held that "a claim is anticipated only if each and every element set forth in the claim is found either expressly or inherently described, in a single prior art reference." Verdegaal Bros., Inc. v. Union Oil Co., 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). "The identical invention must be shown in as complete detail as is contained in the...claim." Richardson v. Suzuki Motor Co., 9 USPQ2d 1913, 1920 (Fed. Cir. 1989) (citation omitted).

WO99/54057 fails to disclose pulsing pressurized air while dispensing liquid material to move the liquid material in a desired pattern, as set forth in claim 10, or varying the pressure of the pressurized air while dispensing liquid material to cause the liquid material to move in a desired pattern, as set forth in claim 14. Rather, WO99/54057 is directed to an apparatus and method for applying controlled patterns of fibrous material wherein the orientation of air outlets causes the fibers to oscillate in a desired pattern. In rejecting claims 10 and 14, the Examiner focuses on language in WO99/54057 which states that "the adhesive and air could be continuous or intermittent depending upon the specific dispensing application." (See Final Office Action dated June 30, 2008, at page 4, No. 6.) Appellants note, however, that WO99/54057 describes the function of continuous or intermittent supply of air and adhesive only to ensure well-defined cut-on and cut-off edges of the material on the substrate. Specifically, WO99/54057 states that:

[a] valve seat 88, preferably made from carbide, is located in a lower portion of the stepped bore 85 that cooperates with a ball 90 formed on the lower end of a valve plunger 92 for providing controlled continuous or intermittent supply of hot melt adhesive to the adhesive distribution channel 62. In this way, hot melt adhesive may be applied to the surface 28 of moving substrate 30 with well-defined cut-on and cut-off edges through the material outlets 76 in accordance with the present invention as will be described in more detail below or as a continuous pattern. (See WO99/54057 at page 22, line 19-page 23, line 6.)(Emphasis added.)

This is the state of the art that is disclosed in the background of the instant application. (See e.g., Application at paragraphs 0003-0004.) Specifically, the Application states "[r]ecently, fibrous web adhesive dispensers have incorporated intermittent control of adhesive and air flows to form discrete patterns of fibrous adhesive layers with well

defined cut-on and cut-off edges and well defined side edges." (See Application at paragraph 0004.)

To control the pattern of the dispensed liquid material, WO99/54057 discloses that oscillation is due to the arrangement of air outlets relative to the liquid outlets. "The orientation of the air and material outlets in accordance with the principles of the present invention improves control of the dispensed material to form a desired pattern on the moving substrate." (WO99/54057 at page 7, lines 16-19.) "The orientation of the material outlets and air outlets in accordance with the principles of the present invention preferably causes the fibers to oscillate in a generally cross-machine direction that improves blending of adjacent fibers." (WO99/54057 at page 9, lines 8-11.) At page 26, line 16, to page 27, line 10, WO99/54057 describes how the orientation of the air outlets 84 causes adhesive fibers to oscillate. Nowhere in WO99/54057 is there any disclosure of pulsing pressurized air while dispensing liquid material to move the dispensed liquid material in a desired pattern.

Rather, WO99/54057 discloses the use of intermittent liquid and air to start and stop the dispensing of adhesive at the beginning and end of each dispense cycle, respectively, so that the adhesive applied to the substrate has well-defined cut-on and cut-off edges (i.e., where the applied adhesive starts and stops), as opposed to a continuous length of adhesive. (See WO99/54057 at page 22, line 19-page 23, line 6.) In this manner of operation, the air is started and stopped with the adhesive. In other words, the air is not operated intermittently while the liquid is being dispensed. See, e.g. WO99/54057 at p. 37, line 16 – p. 38, line 12:

In an "on" state, hot melt adhesive is directed along flow paths defined by the supply passage 516, adhesive

distribution channel 518, vertical passages 530, and adhesive passages 536 formed in the nozzle inserts 534. The hot melt adhesive is emitted through material outlets 540 (FIG. 14) of the nozzle inserts 534 as strands 554a that are directed toward surface 548 of moving substrate 550.

At the same time that hot melt adhesive is emitted through the material outlets 540 in strand form, pressurized air is directed along flow paths defined by the air passages 520, air distribution channel 542, passages 544, and air passages 546 formed through the lower surface 528 of pattern die 502. The pressurized air is emitted through air outlets 556 (FIG. 14) positioned on opposite sides of each material outlet 540. as described in detail above. (Emphasis added.)

WO99/54057, therefore, does not disclose pulsing pressurized air, or varying the pressure of the pressurized air while dispensing the liquid material to move the dispensed liquid material in a desired pattern, as set forth in claims 10 and 14.

For at least the reasons discussed above, Appellants respectfully request that the rejections of claims 10 and 14 be reversed.

Claim 11 depends from independent claim 10, and is therefore in condition for allowance for at least the reasons discussed above with respect to independent claim 10. Accordingly, Appellants respectfully request that the rejection of claim 11 also be reversed.

B. The Rejections of Claims 1, 2, 4-6, 9, and 13 Under 35 U.S.C. §103

Claims 1, 2, 4-6, 9 and 13 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over WO99/54057. Claims 1 and 9 are the only independent claims of these rejected groups and are directed to apparatus for dispensing liquid material.

Claim 1 recites:

a controller coupled with said air valve and operable to actuate said air valve in a manner that pulses the pressurized air discharging from said air outlet as the liquid material is discharged to move the liquid material discharging from said liquid discharge outlet in a desired pattern as the attenuated continuous stream.

Claim 9 recites:

a controller coupled with said air valve and operable to actuate said air valve in a manner that varies the pressure of the pressurized air discharging from said air outlet as the liquid material is discharged to move the liquid material discharging from said liquid discharge outlets and desired patterns.

The Examiner's rejections of claims 1 and 9 should be reversed because the cited reference fails to disclose each and every element recited in these claims, and the Examiner has failed to establish a *prima facie* case of obviousness by not explaining why a person of ordinary skill in the art would modify the reference as alleged by the Examiner. To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. In re Royka, 180 USPQ 580 (CCPA 1974). In determining non-obviousness, prior art references must be considered in the entirety, as a whole, including portions that would lead away from the claimed invention. W. L. Gore & Assoc. v. Garlock Inc., 220 USPQ 303 (Fed. Cir. 1983), cert. denied, 469 U.S. 851 (1984). "[I]t is impermissible within the framework of section 103 to pick and choose from any one reference only so much of it as will support a given position, to the exclusion of other parts necessary to the full appreciation of what such reference fairly suggests to one of ordinary skill in the art." In re Wesslau, 147 USPQ 391 (CCPA 1965). "[R]ejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some

rational underpinning to support the legal conclusion of obviousness.'" KSR Int'l Co. v. Teleflex, Inc., 550 US___ (2007), 82 USPQ2d 1385, 1396 (citation omitted).

Appellants respectfully traverse the rejections of claims 1 and 9 because WO99/54057 fails to disclose an air valve and a controller coupled with the air valve, the controller being operable to actuate the air valve in a manner that pulses the pressurized air as the liquid material is discharged to move the liquid material in a desired pattern, as set forth in claim 1, or that varies the pressure of the pressurized air as the liquid material is discharged to move the liquid material in a desired pattern, as set forth in claim 9. Specifically, WO99/54057 only discloses the intermittent or continuous supply of air and liquid material to create well-defined cut-off and cut-on edges of the dispensed adhesive and not to create oscillating patterns of the adhesive, as discussed above. Moreover, any intermittent discharging of the air is done with corresponding intermittent discharging of the liquid, so that there is no intermittent operation of the air while liquid is being dispensed, as discussed above. The Examiner has provided no rationale as to why a person of ordinary skill in the art would have modified the apparatus of WO99/54057 to pulse or vary the pressure of the air as liquid is being dispensed and, consequently, it would not have been obvious to modify the apparatus of WO99/54057 to include a controller that is operable to pulse the pressurized air or to vary the pressurized air, as alleged by the Examiner. For at least these reasons, Appellants respectfully request that the rejections of claims 1 and 9 be reversed.

Claims 2 and 4-6 each depend from independent claim 1, and claim 13 depends from independent claim 10. Accordingly, claims 2, 4-6 and 13 are each in condition for allowance for at least the reasons discussed above with respect to claims 1, 9 and 10, and Appellants respectfully request that the rejections of these claims be reversed.

C. The Rejections of Claims 7 and 8 Under 35 U.S.C. §103

Claims 7 and 8 stand rejected under 35 U.S.C. §103(a) as being unpatentable over the combination of WO99/54057 and U.S. Patent No. 4,995,333 to Keller et al. Claims 7 and 8 each depend claim independent claim 1 and are therefore in condition for allowance for at least the reasons discussed above for independent claim 1, and because Keller '333 fails to cure these deficiencies. Specifically, Keller '333 does not disclose pulsing pressurized air. Claim 8 depends from claim 7 and further recites that the hot air manifold "comprises a flat heater operable to transfer heat to the air supplied to said nozzle." Appellants further traverse the Examiner's assertion that the type of heater recited in claim 8 is a matter of design choice. The particular type of manifold heater recited in claim 8 serves the purpose stated in the Application of providing "robust control of the pulsed air provided to the nozzle 44." (See Application at paragraph 0027.) Appellants submit that it is not inherent that any type of heating device would perform equally as well, as alleged by the Examiner. For at least the reasons discussed above, Appellants respectfully request that the rejection of claims 7 and 8 be reversed.

Conclusion

For the reasons discussed above, Appellants respectfully urge the Board to reverse the rejections of claims 1, 2, 4-11, 13 and 14.

If there are any questions regarding the foregoing, please contact the undersigned at (513) 241-2324. If any charges or credits are necessary to complete this communication, please apply them to Deposit Account 23-3000.

Respectfully submitted,

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VIII. CLAIMS APPENDIX

1. (PREVIOUSLY PRESENTED) An apparatus for dispensing liquid material as an attenuated continuous stream, comprising:

a dispensing module including a liquid supply passage adapted to be in fluid communication with a supply of liquid material, and an air supply passage adapted to be in fluid communication with a source of pressurized air;

a nozzle operatively coupled to said dispensing module and comprising a liquid discharge passage in fluid communication with said liquid supply passage, and an air discharge passage in fluid communication with said air supply passage, said liquid discharge passage having a liquid discharge outlet for discharging the liquid material, said air discharge passage having an air outlet configured to direct the pressurized air generally toward the liquid material discharged from said liquid discharge outlet;

an air valve operatively coupled to said air discharge passage; and

a controller coupled with said air valve and operable to actuate said air valve in a manner that pulses the pressurized air discharging from said air outlet as the liquid material is discharged to move the liquid material discharging from said liquid discharge outlet in a desired pattern as the attenuated continuous stream.

2. (PREVIOUSLY PRESENTED) The apparatus of claim 1, wherein said controller controls the air valve to move the liquid material discharging from said liquid discharge outlet in an oscillating pattern.

3. (CANCELED)
4. (PREVIOUSLY PRESENTED) The apparatus of claim 1, wherein said controller controls said air valve such that the air discharged from said air outlet is pulsed at a rate of approximately 500 cycles per second to approximately 2000 cycles per second.
5. (PREVIOUSLY PRESENTED) The apparatus of claim 1, wherein said air valve includes an open position and a closed position, and said controller is configured to actuate said air valve between said open and closed positions.
6. (PREVIOUSLY PRESENTED) The apparatus of claim 1, wherein said air valve includes an open position, a closed position and an intermediate position between said open and closed positions and said controller is configured to actuate said air valve between one of said open and closed positions and said intermediate position.
7. (PREVIOUSLY PRESENTED) The apparatus of claim 1, further comprising:
a hot air manifold coupled to said dispensing module for heating the pressurized air supplied to said nozzle, said air valve positioned between the source of pressurized air and said nozzle.
8. (PREVIOUSLY PRESENTED) The apparatus of claim 7, wherein said hot air manifold comprises a flat heater operable to transfer heat to the air supplied to said nozzle.

9. (PREVIOUSLY PRESENTED) An apparatus for dispensing liquid material, comprising:

a dispensing module including a liquid supply passage adapted to be in fluid communication with a supply of liquid material, and an air supply passage adapted to be in fluid communication with a source of pressurized air;

a nozzle operatively coupled to said dispensing module and comprising first and second liquid discharge passages in fluid communication with said liquid supply passage, and an air discharge passage in fluid communication with said air supply passage, said first and second liquid discharge passages having respective first and second liquid discharge outlets for discharging the liquid material, said air discharge passage having an air outlet positioned between said first and second liquid discharge outlets and configured to direct the pressurized air generally toward the liquid material discharged from said first and second liquid discharge outlets;

an air valve operatively coupled to said air discharge passage, and

a controller coupled with said air valve and operable to actuate said air valve in a manner that varies the pressure of the pressurized air discharging from said air outlet as the liquid material is discharged to move the liquid material discharging from said liquid discharge outlets in desired patterns.

10. (PREVIOUSLY PRESENTED) A method of dispensing liquid material as an attenuated continuous stream from a nozzle having liquid discharge outlet and an air outlet, the method comprising:

dispensing liquid material from the liquid discharge outlet;

discharging a stream of pressurized air from the air outlet toward the dispensing liquid material; and

pulsing the pressurized air while dispensing the liquid material to cause the liquid material to move in a desired pattern as the attenuated continuous stream.

11. (PREVIOUSLY PRESENTED) The method of claim 10, further comprising:

pulsing the pressurized air to cause an oscillating pattern in the discharging liquid material.

12. (CANCELED)

13. (PREVIOUSLY PRESENTED) The method of claim 10, wherein pulsing the pressurized air further comprises pulsing the air at a rate of approximately 500 cycles per second to approximately 2000 cycles per second.

14. (PREVIOUSLY PRESENTED) A method of dispensing liquid material as an attenuated continuous stream from a nozzle having liquid discharge outlet and an air outlet, the method comprising:

dispensing liquid material from the liquid discharge outlet;

discharging a stream of pressurized air from the air outlet toward the dispensing liquid material; and

varying the pressure of the pressurized air while dispensing the liquid material to cause the liquid material to move in a desired pattern as the attenuated continuous stream.

IX. EVIDENCE APPENDIX

None

X. RELATED PROCEEDINGS APPENDIX

None